Charge Number: Various

Program Title: Analytical Research

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## I. HPLC Separations of Oriental Tobacco

HPLC separations of oriental tobacco has continued on a cooperative basis with the Flavor Group. Cumulative collections of three peaks detected by refractive index are in progress. These cuts will be submitted for identification by NMR and possibly mass spectrometry.

## II. Side Stream/Main Stream FTC Tar Ratios

Work continues toward generation of a revised correlation for FTC tar by the acridine orange fluorescence method versus the gravimetric FTC tar method. The March 1980 CI smoke extracts used for nicotine and water determinations is being examined. This data should be complete by the end of April.

## III. Tipping Paper ink/adhesive Problem

Identification of constituents extracted from the printed paper continue. Several known compounds have been received and checked for HPLC retention time. These retention times check with identification made by mass spectrometry (i.e., triphenyl phosphate). An unknown peak collected from Schweitzer-Hermetite remains unidentified.

The nitrocellulose fraction separated from the printed inks is undergoing GPC analysis by M. Logue to supply molecular weight distribution information and possibly elements so far undetected. A comparison is being made of Schweitzer-Milprint, Schweitzer-Hermetite and Ecusta 701.

The feasibility of an experimental manufacturing run using tipping paper printed with solvent systems representing variation from low to high viscosity and variations from fast to slow solvent systems is being explored in cooperation with manufacturing personnel.

## IV. "Aging" of Standards for the Kjeldahl Nitrogen Method

Initial studies show that the "aging" effect (i.e., increased absorbance and scatter with age) can be eliminated by storage of the standards in Nalgene® bottles instead of the usual glass containers. The precise cause for this is not known but more studies are planned for confirmation of this important phenomenon.

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V. Puff-by-Puff Analyses by Turnable Diode Laser (TDL)

A high efficiency vacuum pump is being installed to allow puff-by-puff analyses using the 100-meter gas cell with the TDL. Four different smoking assembly designs have been evaluated for application to the unit. Since dead volume in the system affects the puff profile shape, any system used must be characterized so that valid comparisons can be made between different cigarette types.

VI. Chemometrics

The headspace collection and gc analysis has been completed for the 12 Trinity model's filler ( 6 x 85 mm and 6 x 100 mm). The chromatograms have been collated and are ready for application of chemometric techniques. Data will be generated for Cambridge to allow an over-all comparison of the headspace filler volatiles of: Kent III, Cambridge, Carlton (1 mg) and Carlton 100's.

VII. Assistance to PM International

A system for the automated determination of TPM, $H_2O$, nicotine, and tar was installed in PM facilities in Buenos Aires, Argentina. A similar, but up-dated, system will be set-up in the Maracay, Venezuela labs during May and a 5th such unit is scheduled for Quito, Ecuador.

VIII. Study of Tobacco Constituents by FT-IR-EGA

Work is continuing on the program to identify the gaseous decomposition products of tobacco constituents. Amino acids, pectin and cellobiose are currently being examined. Tobacco cell wall material obtained from Gordon Bokelman will also be included in this study. An examination of lignin has been completed and an internal special report issued (Ac. #80-074).

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